

World Meteorological Organization (WMO)

SWFDP for South Pacific (**SWFDDP**)

SG-SWFDP in Geneva

28 February to 2 March 2012

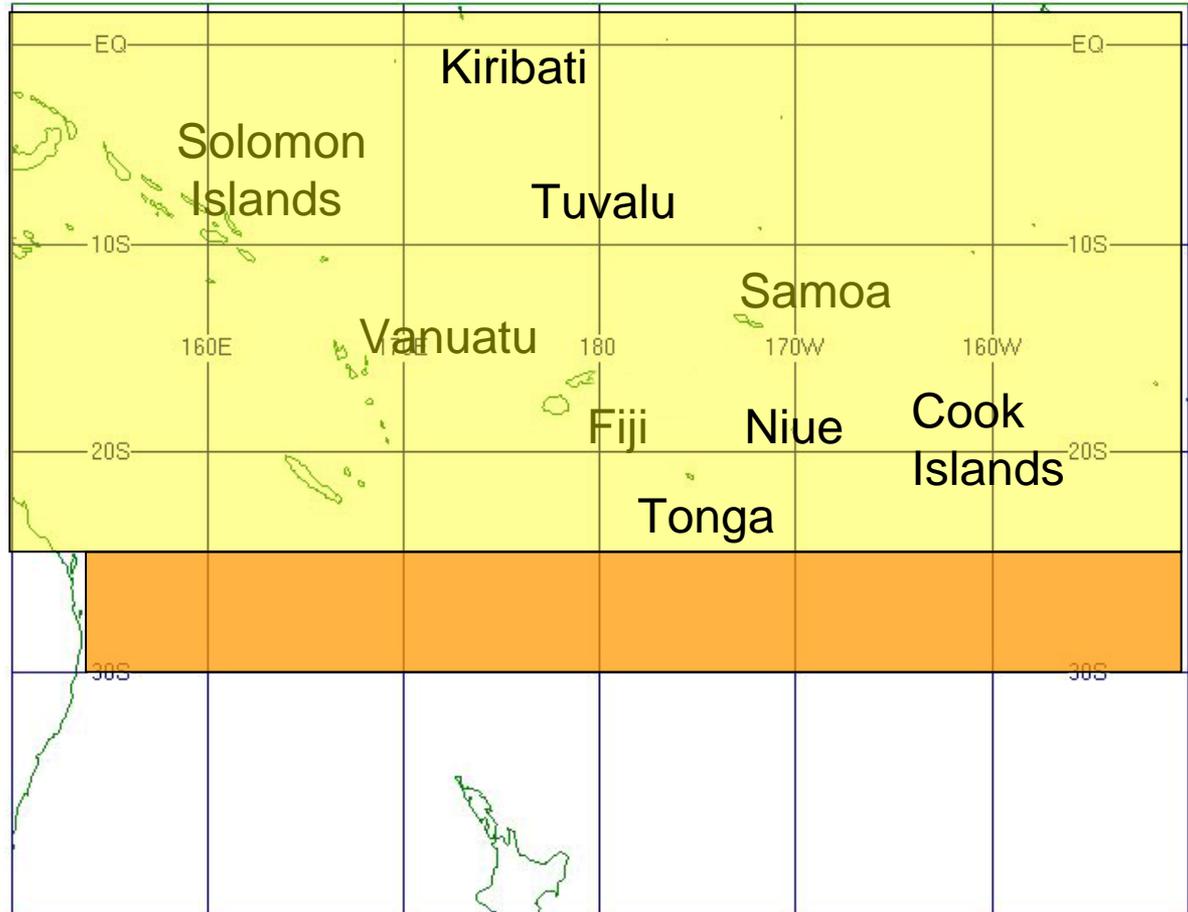
Steve Ready





***South Pacific
Window***

South Pacific 'Window'



***150°E to 150°W,
2°N to 25(30)°S***

Cascading Forecasting Process

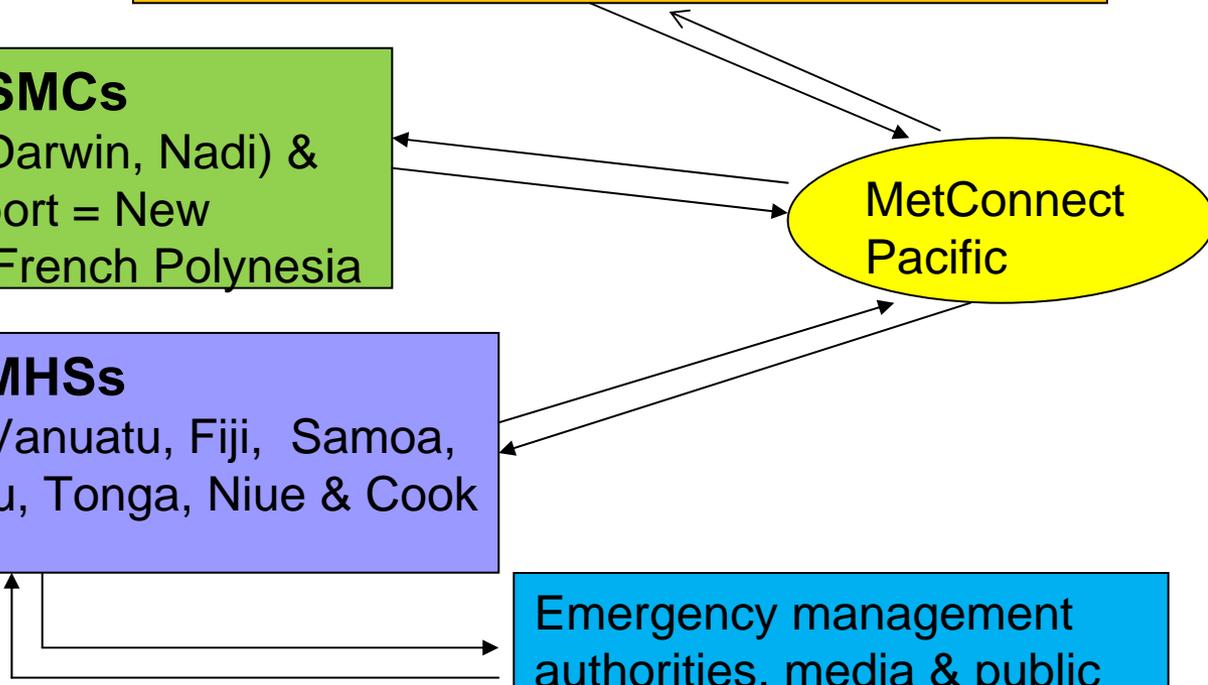
GLOBAL CENTRES
(UK, EC, NCEP (USA), JMA)

RSMCs
(Wellington, Darwin, Nadi) &
regional support = New
Caledonia & French Polynesia

NMHSs
(Solomon Is, Vanuatu, Fiji, Samoa,
Kiribati, Tuvalu, Tonga, Niue & Cook
Islands)

Emergency management
authorities, media & public

MetConnect
Pacific



SWFDDP progress

- **Overall, SWFDDP is going well but... What does this mean?**

Severe Weather Forecasting and Disaster risk reduction Demonstration Project (SWFDDP) milestones

- **RSMT (1): 21-24 April 2009**
- **Pilot: 1 November to 31 October 2010 – NMHSs included Solomon Islands, Vanuatu, Samoa and Fiji. Total = 4.**
- **RSMT (2): 1-4 November 2010**
- **Full Demo: 1 November 2010 to 31 October 2013 (?) – Kiribati, Tuvalu, Tonga, Niue and Cook Islands joined Solomon Islands, Vanuatu, Samoa and Fiji. Total =9.**

Achievements

- **PROJECT REPORTING:** 3 RSMCs and 9 NMHSs report every 4 months about severe weather events & progress on Project goals. Next one due 17 March 2012.
- **METCONNECT PACIFIC:** hosted in The Cloud, with no performance issues. Version 2 installed on 15 December 2010 including addition of Australian Bureau of Meteorology ACCESS-T products
- **CRITERIA for RSMC Wellington SOUTH PACIFIC GUIDANCE CHARTS** changed from 1 December 2010 to reflect experience during the SWFDDP Pilot.

Current Criteria (old) for South Pacific Guidance charts

HEAVY RAIN
(*non-TC*)



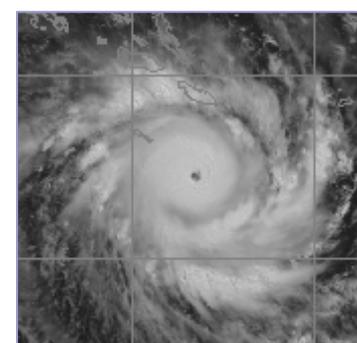
STRONG WIND
(*non-TC*)



LARGE WAVES
(*non-TC*)



TROPICAL CYCLONES



$\geq 100\text{mm}$ in 24 hours
($> 50\text{mm}$ in 24 hours)

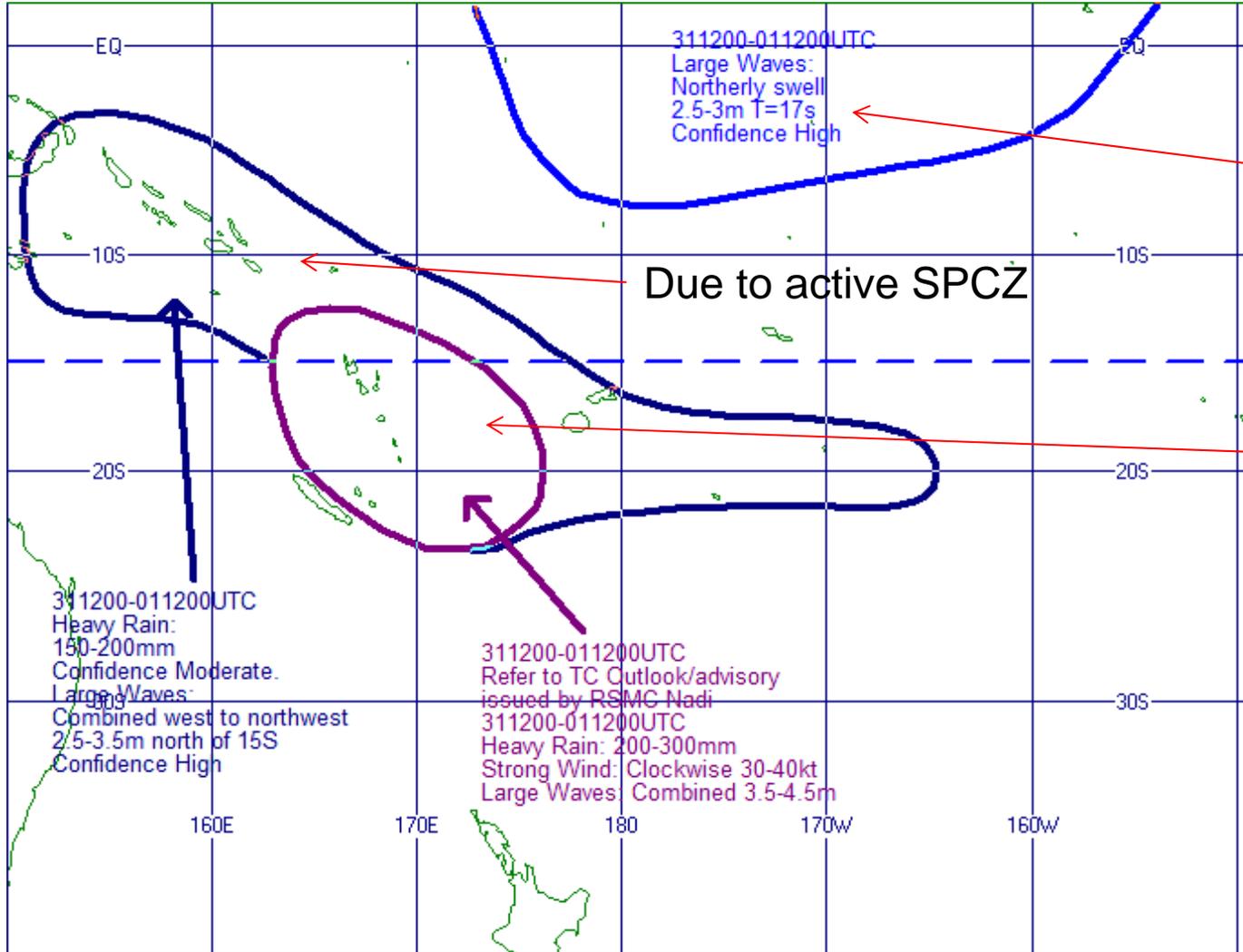
$\geq 30\text{knots}$
($\geq 25\text{knots}$)

$\geq 2.5\text{m}$ north of 15°South now or later
 $\geq 3.5\text{m}$ at & south of 15°South
($\geq 2.5\text{m}$ everywhere)

Confidence factors

Low (1 in 5 chance) or moderate (2 in 5 chance) or high (3 in 5 chance)

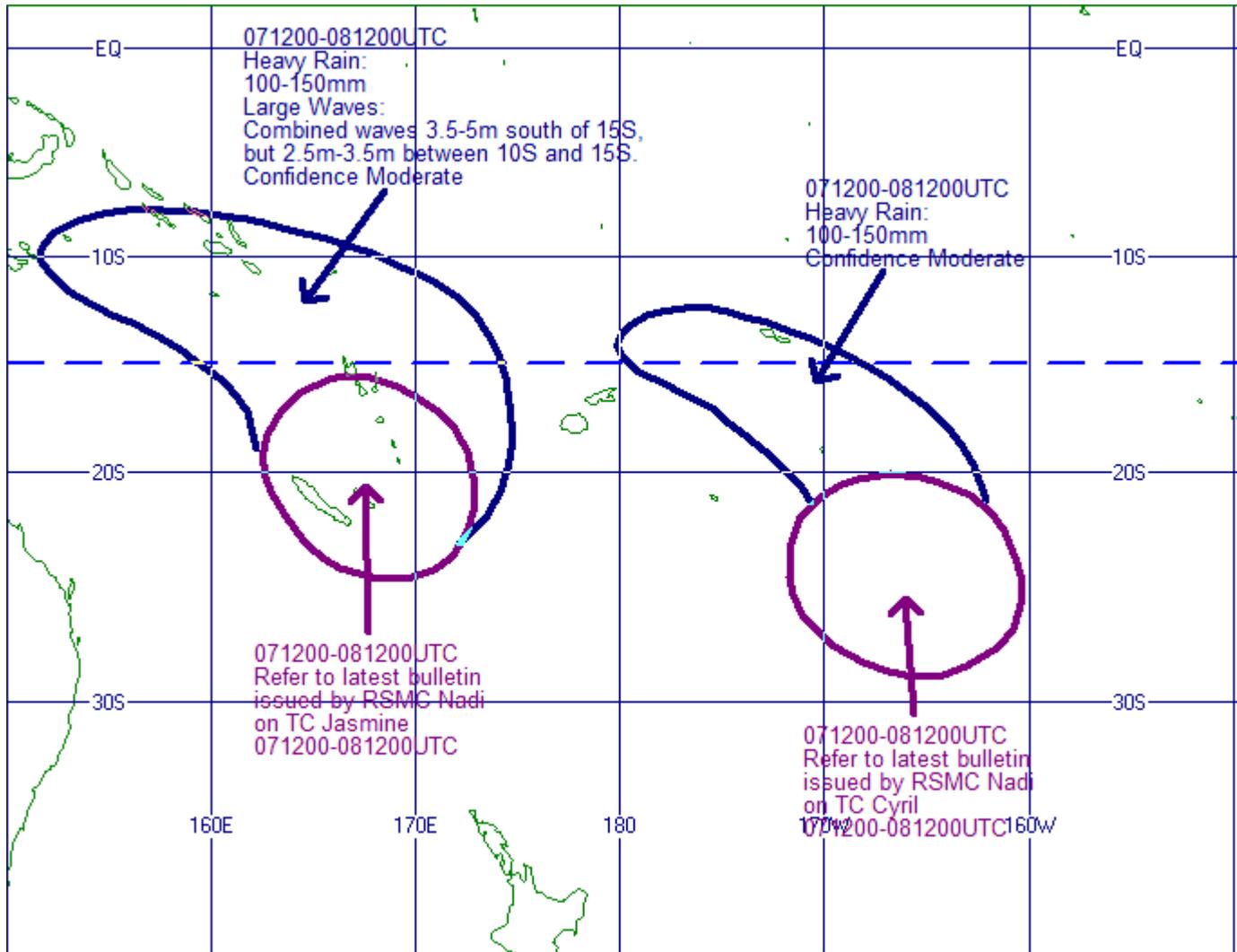
South Pacific Guidance (SPG) product



Common guidance during Northern Hemisphere winter

Tropical depression with TC status potential – note extra info over and above reference to TC Outlook

South Pacific Guidance (SPG) product



TCs Jasmine and Cyril plus additional band of heavy rain linked to TCs.

Evaluation of South Pacific Guidance charts

Mar/Apr/May/Jun	SWFDDP area	Solomon Islands	Vanuatu	Kiribati	Tuvalu	Fiji	Samoa	Tonga	Niue	Cook Islands
Heavy rain	446	89	131	0	0	47	15	52	7	24
Strong wind	216	5	41	0	0	19	2	16	3	51
Large waves	847	61	135	128	17	56	156	99	87	387
TC references	45	0	11	0	0	13	0	13	0	0
Combination of one or more of above	949	112	228	128	17	91	156	135	92	391

Example: Data for period 2nd 4-monthly period of Full Demonstration, 1 March to 30 June 2011. Figures represent number of South Pacific Guidance charts with guidance for heavy rain, strong wind, large waves, Tropical Cyclone references for overall South Pacific area and country by country.

SWFDDP Goals & NMHS feedback (1)

- **Goal 1:** improve the ability of NMHSs to forecast severe weather and wave events
 - more confident and proactive in issuing forecasts
 - Interactions between RSMC Wellington and participating countries
- **Goal 2:** increase the lead times for issuing forecasts & warnings
 - 1 to 2 days in advance for damaging swell warnings
 - 6 to 24 hour for heavy rainfalls (excluding meso-scale events)

SWFDDP Goals & NMHS feedback (2)

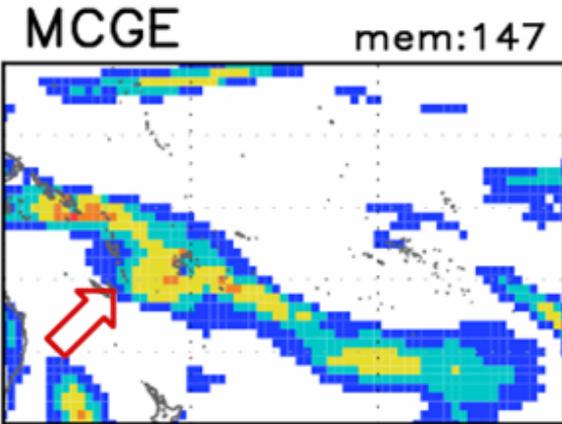
- **Goal 3:** improve the interaction between NMHSs and Disaster Management Centre Civil Protection Authorities (DMCPAs)
 - **Suggestion that SWFDDP might have improved the quality of exchanges but not the frequency. More work needs to be done in this area.**
- **Goal 4:** identify gaps and areas for improvement
 - **no wave observations (except for eye witness accounts)**
 - **lack of skill in forecasting localised, heavy rainfall events**
 - **poor internet connectivity**
 - **lack of forecasting skills & experience in the region**
 - **little or no verification work done**

SWFDDP Goals & NMHS feedback (3)

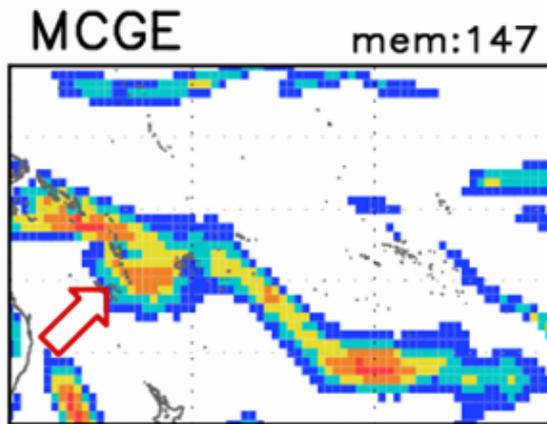
- **Goal 5:** improve the skill of products from Global Centres and RSMCs through feedback
 - **Global Ensemble guidance weak for rainfalls $\geq 100\text{mm}$**
 - **enhanced satellite products required to help with forecasting localised heavy rainfall events**

Usefulness of GIFS-TIGGE products

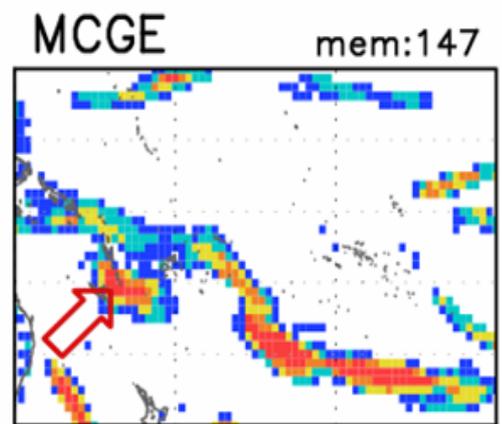
- **Tropical cyclone Jasmine** – affected southern Vanuatu on 071200-081200 UTC February 2012. What GIFS-TIGGE indicated 4 to 5 days out, 2 to 3 days out and 0 to 1 day out.
- **Severe flooding over Fiji** – about northern and western parts of Viti Levu) on 231200-241200 UTC January 2012. What GIFS-TIGGE indicated 4 to 5 days out, 2 to 3 days out and 0 to 1 day out.



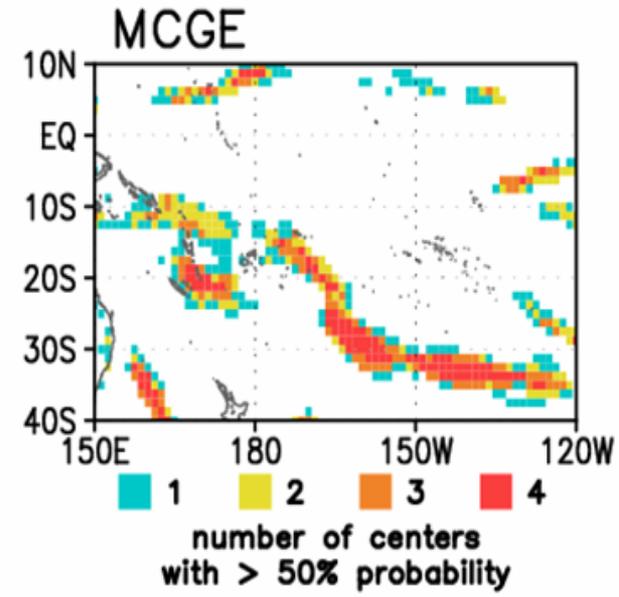
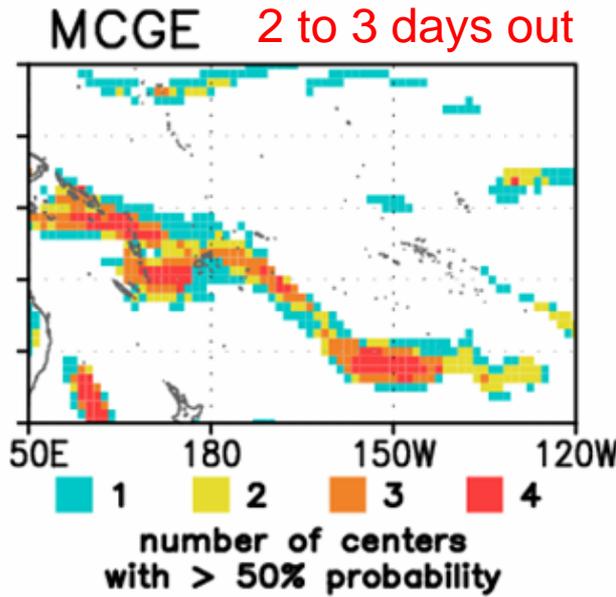
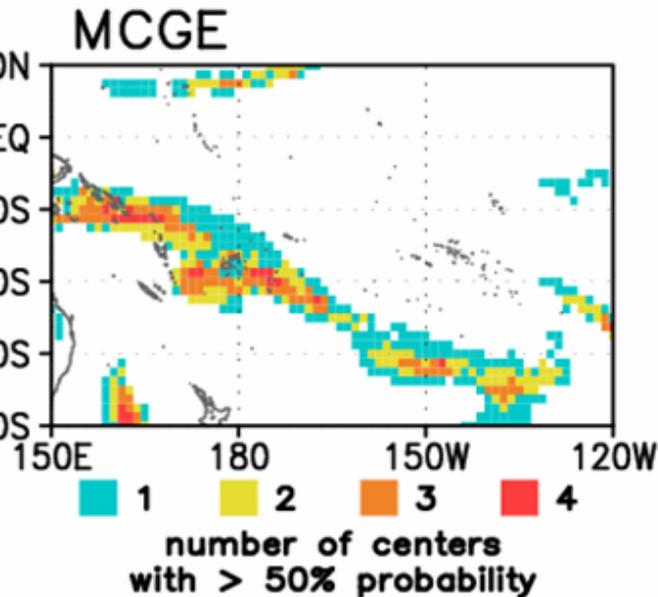
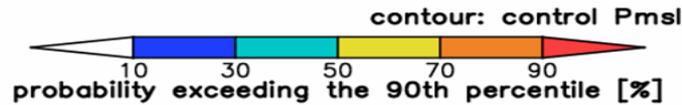
4 to 5 days out

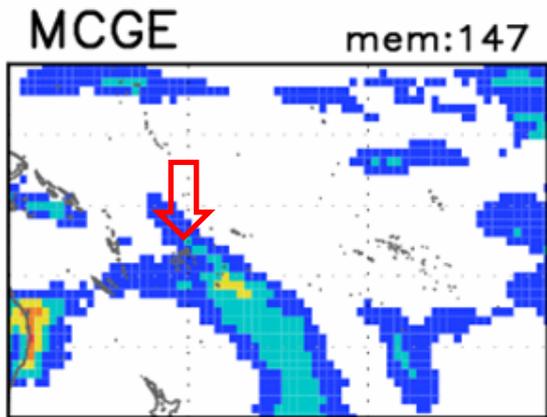


2 to 3 days out

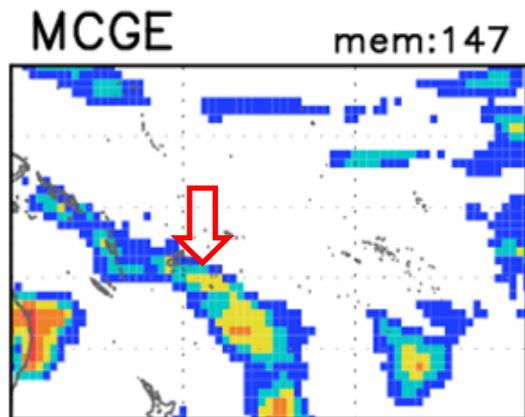


0 to 1 day out

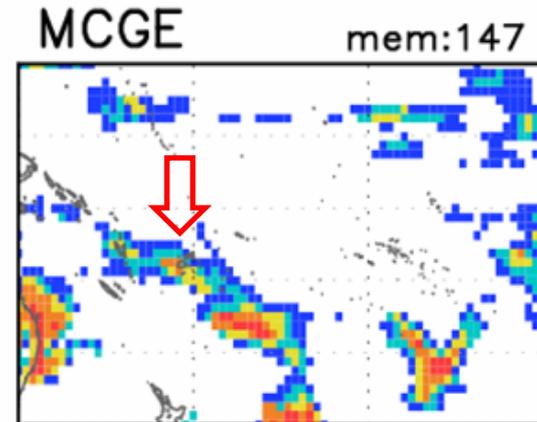




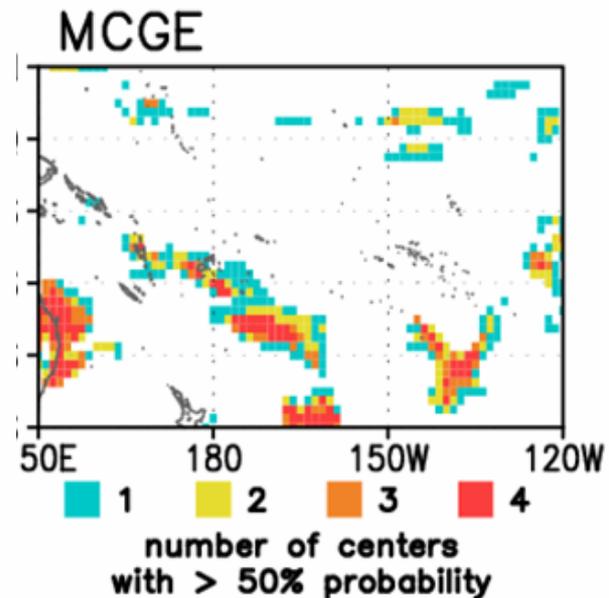
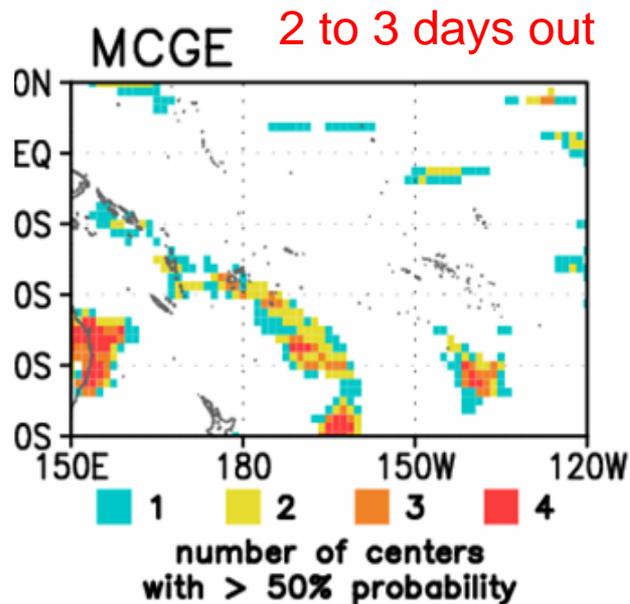
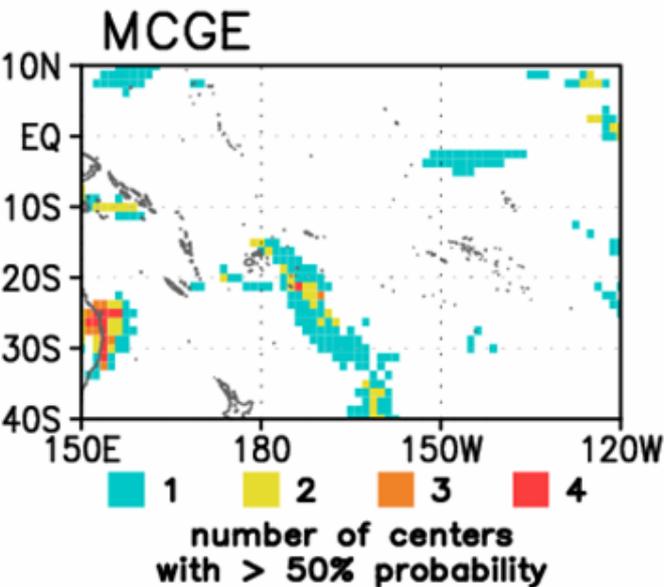
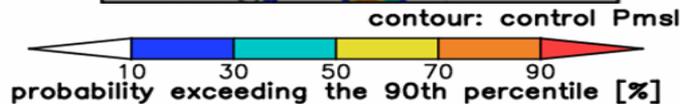
4 to 5 days out



2 to 3 days out



0 to 1 day out



Training (1)

- **IN-COUNTRY VISITS (round 1):**
 - Facilitated by RSMC Wellington before start of Full Demonstration Project except for Niue.
 - Tuition by Australian Bureau of Meteorology in use of TC Module software, Vanuatu, Fiji, Samoa & Tonga, February-April 2012
- **WMO/Japanese International Cooperation Agency (JICA) course**, Nadi, 1-12 August 2012.
Rochelle Fleming, RSMC Wellington meteorologist.

Training (2)

- **9th WMO Southern Hemisphere Tropical Cyclone and Public Weather Services course**, Bureau of Australian Bureau of Meteorology National Training Centre, Melbourne, 5-23 September 2011
- **IN-COUNTRY VISITS (round 2): sponsored by NZ Ministry for the Environment from Climate Change Development Fund. Facilitated by RSMC Wellington May to November 2012.**

2012 In-country training programme

1. **Samoa:** 7-11 May 2012, James Lunny & Jon Tunster
2. **Niue:** 21-25 May 2012, Mark Schwarz & Jon Tunster
3. **Fiji and Kiribati:** 12-22 June 2012, James Lunny & Jon Tunster
4. **Cook Islands:** 17-21 September 2012, Jon Tunster & Steve Ready
5. **Tuvalu and Tonga:** 2-12 October 2012, Mark Schwarz & Jon Tunster
6. **Solomon Islands and Vanuatu:** 22 October – 2 November 2012, James Lunny & Jon Tunster

Challenges (1)

- **SUSTAINABILITY of SWFDP**
 - What plans does WMO have for the long term sustainability of SWFDP in all regions?
 - External funding is absolutely essential, especially in the case of the Meteorological Service of NZ
 - **SWFDDP issues**
 - * On-going development work, especially on MetConnect Pacific website
 - * On-going training for participating countries
 - * Lack of WMO Meteorologists in the region

Challenges (2)

- **NEW or REVISED PRODUCTS**
 - Heavy rain & wave warnings
 - Separate bulletins to routine forecasts
 - Able to be verified
 - TC Outlook extending to 5 days
 - For most countries, SWFDDP just supports pre-existing products
- **CONTRIBUTIONS OF PARTICIPATING COUNTRIES**

Five (5) of 9 are dependent on RSMC Nadi for some or all of their forecasting services – **how do they play a meaningful part in the Project?**



Vanuatu Meteorological Service
Weather Forecasting Center
Telephone: (678) 22932, Fax: (678) 27414
Email: forecast@meteo.gov.vu
Website: <http://www.meteo.gov.vu>



Severe Weather Warning for Northern and Central Vanuatu issued by the Vanuatu Meteorological Service, Port Vila at 07:41 am Saturday, 22 October 2011.

Synoptic Summary

A high pressure over the Tasman Sea maintains moderate to fresh trades over the Vanuatu group. Meanwhile a surface trough over the northern islands, slow moving.

Forecast

East and southeast inland winds of 40 to 50 km/hr over the central and northern Vanuatu. Heavy rainfall is also expected over Torba province, possibly extending to Sanma later today. Flooding is also expected in these two provinces. The Vanuatu National Disaster Management Office (NDMO) advises people in these areas to be cautious.

The next routine bulletin will be issued at 11:00 am.

Challenges (3)

- **CASCADING PROCESS** – How do we provoke a more fired-up approach to communicating with other agencies (both private and Government), the media and the public?
- **NOWCASTING TOOLS** - How do we overcome the absence of radar?

Challenges (4)

- **IMPROVING QUALITY OF SWFDDP PROGRESS REPORTS**
 - Statements tend to be very generalised without a lot of substance.
 - 5 of the 9 countries don't have primary responsibility for issuing tropical cyclone and non-tropical cyclone warnings
- **VERIFICATION of FORECASTS and WARNINGS**
 - existing products are too generalised
 - more objective forecasts required otherwise verification initiatives will be difficult if not meaningless.

Outlook

- **3rd RSMT meeting** in early 2013
- **Full Demonstration Project due to end late 2013.** How do we decide whether the project is ready to go operational and what does it mean in practical terms?
- Before this happens... **Sustainability of SWFDDP** and indeed the entire SWFDP programme needs to be sorted
- What implications does a **Western Window** have for the South Pacific area?
- **GIFS-TIGGE multi-model ensemble products** to be tested on SWFDP websites